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**The emergence of interactions
as strategic entities in value
chain networks**

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TITLE: **The emergence of interactions as strategic entities in value chain networks**

ABSTRACT: **Purpose:** The article analyses the interactions that are engaged in when specialist organisations collaborate in value chain networks. It aims to bridge the gap between existing theory and emerging practices and identify a conceptual foundation for future research and practical application. Interaction costs are described as including transaction costs plus the costs for exchanging ideas and information.
Design/methodology/approach: The paper adopts a conceptual approach, and introduces the basic elements of an interaction theory based on past theory and current practices.
Findings: In an increasingly global economy, reducing risks while maximizing returns for emerging business models are a key concern. The article puts forward the view that as interaction costs decrease, potential business partners have greater scope to interlink their business strategies and operations to co-create value. It discusses the nature of interactions and highlights three factors that are either reducing interaction costs or increasing the effectiveness or frequency of interactions, thus increasing their facility for business purposes: the convergence of technologies, the delineation of roles within value chain business networks, and the emergence of innovative interaction strategies among network participants. It concludes by emphasizing the importance of an interactions strategy through an analysis of IKEA's business model from an interactions perspective.
Originality/value: The paper provides the basis of an interactions framework for researchers and practitioners to analyse value adding activities and to develop strategies in value chain networks.

KEY WORDS: *Value chain networks, interaction costs, tacit interactions, transactional interactions, transformational interactions*

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1. Introduction

As organisational and industry structures become flexible in response to market opportunities it is interesting to probe the underlying reasons that have facilitated these developments and to theorise emerging trends. The aspect of flexibility most pertinent in this paper is the shift away from vertically integrated organisational structures towards what have variously been described as holonic (McHugh et al. 1995; Pebler 2000), virtual (or modularised business models. A key feature of these models is the ascendancy of specialised organisations and their participation in value creating streams that were previously the domain of vertically integrated industry giants. Examples of this evolutionary shift are plentiful. Butler et al. (1997) observed that specialisation had fragmented integrated business systems such as textiles, when the introduction of EDI (electronic data interchange) resulted in the disaggregation of procurement, spinning, weaving, finishing, logistics and retailing in the apparel industry. Jacobides (2005) discussed the research on several industries as diverse as minicomputers, automobile production and banking. He noted that the computer industry was originally dominated by a few companies, but then disaggregated into many segments including components makers, software developers and resellers. In the banking industry, the focus of his own study, Jacobides (2005) found that when data processing became a separate part of the production process and was outsourced, nonfinancial firms such as EDS, IBM and Accenture took up opportunities for entry. This altered the dominant business model in that industry immeasurably.

It seems likely, as suggested by Glazer (1991), Pine (1993), Ashkenas et al. (1995), Day (1999) and others, that changes in both consumer demand and market structures are important causes of moves towards new ways of doing business. Among observations of consumer markets were that they were increasingly characterised by instability, low predictability and uncertainty, with higher levels of demand for quality, 'fashion' and service. Market structure changes included a shift in power towards the buyer, saturation in highly competitive markets, shortening product life cycles with little predictability, high rates of technological change, smaller and less predictable customer orders in terms of order volumes and ordering frequency, and an expanding number of distribution channel alternatives. In short, the common argument of these writers was that we are witnessing significantly increased complexity, sophistication and unpredictability in customer demands and markets, and as a result, an evolution towards flexible business models that are more effective in these circumstances.

Interestingly, Drucker (2001) noted that industry responses to market pressures were quite different in earlier times. He mentioned Standard Oil and Ford as companies that chose the alternative response of vertical integration, and in the process became exemplars for successful organisations in the last century. At that time ownership of all assets and control of production and distribution made good business sense. Clearly, circumstances changed over the years and these old solutions were replaced by their very opposite – vertical disaggregation and reintegration into virtual value creating systems linking a number of participants. Drucker (2001) suggested that the underlying dynamic for this centred on contemporary innovations encompassing all aspects of business from design, production, marketing and logistics: these were driving the formation of networks and partnerships, where access to, rather than ownership of assets and the means of production was the key to value creation. Several other commentators have argued along similar lines, highlighting technological advances as the impetus for the emergence of new business models (Boulton et al. 2000; Pebler 2000).

There is, therefore, mounting evidence for the proposition that changing customer markets are increasing the importance of flexibility for business success and that technology is facilitating the development of business models that embody this characteristic. What is less clear is how technology is transforming the ways in which organisations interlink, both in an operational and strategic sense, and its role in the twin processes of vertical disintegration and virtual reintegration that we are currently witnessing. Technology, of itself, does not determine production or other business processes. Its uses and applications are manifold, and are limited only by human ingenuity and imagination on the one hand, and the opportunity to engage, on

the other. What is critical, however, is how businesses use the capacity that technology provides to create opportunities for richer communication and global reach, and how their interactions simulate further innovations in thinking about broader management systems and strategies.

Transaction cost economics (TCE) (Coase 1937; Williamson 1985) provides a useful, although incomplete view of the relationships within and across organisations that facilitate collaboration. In TCE, the relative advantages of markets and hierarchies for organizing economic activities have been identified in terms of coordination or transaction costs. While the term ‘transaction cost’ was not used in Coase’s original work, he later explained that “in order to carry out a market transaction it is necessary to inform people that one wishes to deal and on what terms, to conduct negotiations leading to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on” (Coase 1960). Based on this assertion, Dahlman (1979) classified transaction costs into search and information costs, bargaining and decision costs and policing and enforcement costs. Transaction costs are the result of asymmetric distribution of information between economic agents involved in a transaction. From this perspective, the choices available to the firm are essentially based on a comparison of the relative costs of using internal resources and those of external suppliers. If the external sourcing option is lower in cost and comparable in terms of quality and so on, the economic solution is to outsource. An explanation of the emergence of new business models from this perspective would centre on the economics of specialisation, the relative ease in information transfer and improvements in global logistics. In this paper we acknowledge these factors and broaden the focus to include all interactions that are engaged when organisations participating in new business models relate with each other in devising mutually beneficial strategies concerned with sourcing and procurement decisions. Interaction costs include transaction costs but add the costs for exchanging ideas and information (Butler et al. 1997). It is our view that as interaction costs decrease as a result of technological advances, potential business partners have more opportunities to interlink their businesses and co-create value. We are also of the view that this does not happen in a technologically determined or mechanistic way. There is considerable variety in the way technology is used, and thus many potential variations in the systems, processes and strategies that emerge. Theoretically, there are no constraints on *how* the customers’ value expectations may be met, but unless all of the organizational participants achieve specific financial objectives the virtual value creating system cannot survive. Both feasibility (customer perceptions of service are equal to or exceed their expectations) and viability (stakeholder partner perceptions of participation are equal to or exceed their expectations) are essential criteria that have to be satisfied.

Our perspective on interactions is based on that of Butler et al. (1997) who described them thus:

Individuals and organisations interact to find the right party with which to exchange; to arrange, manage, and integrate the activities associated with this exchange; and to monitor performance. These interactions occur within firms, between firms, and all the way through markets to the end consumer. They take many everyday forms – management meetings, conferences, phone conversations, sales calls, problem solving, reports, memos – but their underlying economic purpose is always to enable the exchange of goods, services, or ideas.

Butler et al. (1997) found that interactions accounted for over a third of economic activity in the US and declared that: ‘interactions exert a potent but little understood influence on how industries are structured, how firms are organised, and how customers behave’. Further, they argued that any major change in the level or nature of interactions would trigger a new dynamic in economic activity and that the current technological developments would act as a catalyst increasing “interactive capacity”.

We contend that the predicted impact of “the age of interactions” proposed by Butler et al. (1997) is already visible. However, some ten years on we consider that interactions remain poorly understood. In the meantime the shift away from vertically integrated organisations towards disaggregation into selective specialisations and their recombination into virtually

integrated systems is well underway. As interaction costs decline companies are better able to coordinate marketing and distribution of an increasingly wider range of products and services. Amazon.com is an example of this. It has expanded the range of products available and manages the electronic offers of a number of traditional book retailers. The traditional production economies of scale are declining in importance and this is likely to continue. In short, falling interaction costs are making smaller business sizes increasingly viable. A new era of production economics is replacing the traditional economies of scale.

In this paper we explore the notion of interactions in emerging business models and delineate factors that are either reducing interaction costs or facilitating the frequency or effectiveness of their usage for business purposes. We also predict that improvements in interaction efficiency will increase the number of businesses working together in networks, as well as increasing the use of network applications within businesses, thus accelerating the trend towards virtually integrated business models within and even across industries. We discuss three factors that are either reducing interaction costs or increasing the effectiveness or frequency of interactions: the convergence of technologies that are improving connectivity and the power of information systems; the delineation of roles within virtual networks that provide better coordination and strategic alignment; and the development of new interaction strategies among network participants.

2. Emerging business models

We characterise emerging business models as structured responses to business opportunities that involve changes to internal and external resources management, resources in this context being assets, processes and capabilities. They are typically multi-enterprise in their nature and are built around value chain networks. Value chain analysis focuses attention on the full set of activities that together culminate in the delivery of a product or service (Rainbird 2004; Walters & Rainbird, 2006). As the cornerstone of emerging business models, the value chain network approach provides a framework for analysing activities that enhance productive capacity and service delivery, as well as for tracking the development of new sources of profit within an industry, a process that has been described as 'value migration' (Slywotzky, 1996). In the case of automobiles, value has migrated away from production towards marketing and service processes (Gadiesh & Gilbert, 1998), although this is but one example of a phenomenon that is becoming widespread across all industries.

In an analysis that examines this trend from a technology perspective, Hagel and Singer (1999) focussed on the opportunities for entry to new markets available to specialist organisations due to electronic networks. They argue that as the exchange of information and "digestion" increases through electronic networks, the unbundling of traditional organisational structures becomes an imperative as specialists are able to offer cost-effective strategy options (low cost alternatives). They also suggest that this had led to car manufactures, for example, adopting outsourcing models for manufacturing operations and to enter the after-market through partial acquisitions or partnerships or even fully acquiring downstream companies.

Sawhney and Parikh (2001) contend that value in a networked world behaves very differently than it does in the traditional, bounded world. From this perspective, value chains that are integrated through virtual networks have a greater capacity to deliver customer and stakeholder value and superior financial performance than the traditional, vertically integrated organizational forms. Possibly the defining characteristic of new business models is the ability of each participant to focus on their key resource(s), contributing to an overall inter-organisational excellence. The resources may be specific tangible or intangible assets, an exclusive process and/or an exclusive capability. Participating in networks enables individual organisations to match their resources to specific value creating processes and to cooperate in a network structure with organisations who offer complementary specialist resources.

Significantly, many firms are beginning to understand the implications of the value chain/value network model and that achieving a manageable share of market added value by identifying a specific position within the industry value chain and establishing economically viable

relationships with partner organisations is preferable to attempting to dominate the entire value chain. What becomes strategically important is identifying one's own core capabilities, deciding where in the value chain these are to be most cost-effectively deployed, and complementing these with partnership opportunities (Byrne & Brandt, 1992). In vertically integrated models, assets and capabilities are owned and controlled by the one firm and require considerable investment and upkeep. In the virtual context, this is clearly not the case.

In emerging business models interactions are therefore strategically and operationally important. They govern decisions and arrangements encompassing the roles of system participants, strategic alignment, identification of key assets and capabilities that are to be shared, and a host of operational imperatives. In the next section we discuss the nature of interactions in more detail and introduce a new typology.

3. Towards a theory of interactions

For new business models to be effective, certain minimum requirements as to the quality and scope of intra- and inter-organisational interactions have to be met. The importance of interactions for productivity was highlighted by Teresko (2006) in a recent analysis of Toyota. A number of aspects of their operation were identified. Teresko makes the point that these features are the result of Toyota management working on an intra and inter-organisational basis to improve the interactions involved with each productivity performance characteristic.

Butler et al. (1997) stressed the importance and impact of interactions. Their purpose appeared to be to bring awareness of interactions and to a degree "create an agenda" for others to explore. Expanding the concept of transaction costs, they proposed the term 'interactions' to include all searching, coordinating and monitoring activities that people and firms engage in when they exchange services, goods and ideas. While the term 'transaction costs' includes the costs of formal exchange of goods and services in B2B or B2C interactions, 'interaction costs' include the costs of formal exchanges along with the costs for exchanging ideas and information (Hagel and Singer 1999). Interactions take a range of forms including management meetings, phone conversations, conferences, problem solving, sales calls, reports and memos (Butler et al. 1997). While the impact of IT enabled interactions predicted by earlier authors (Butler et al. 1997; Malone et al. 1987) is clearly visible, the nature of these interactions and their impact on evolving business models are yet to be well understood.

Two types of interactions have been identified by Johnson et al. (2005): transactional and tacit:

Tacit interactions involve ambiguity and require drawing on tacit or experiential knowledge and a higher level of judgment. Tacit interactions are becoming increasingly important in the business environment. Production workers at Toyota Motor, for example, continually collaborate with engineers and managers to find new ways of solving quality problems and reducing costs (Beardsley et al. 2006).

Transactional interactions include information searches for product-service sources and availability, obtaining supplier specifications and terms of trade. They are often rule-based and can be automated such as clerical and accounting work, order processing and management, tracking of goods, and payments. EDI (electronic data interchange) systems have facilitated the resolution of IT problems with scripts and automated tools.

We add a third type of interaction – transformational interactions – to support transformational activities described by Johnson et al (2005). Transformational interactions include production scheduling and communications necessary for carrying out transformational activities. These activities involve the extraction and conversion of raw materials into finished goods, running heavy machinery and operating production lines or mining coal as described by Johnson et al.

The increasing importance of tacit interactions has implications for both organizational structures and technology investments. The growth of a tacit workforce and the decline of the transactional and transformational ones would require companies to rethink organizational structures to facilitate tacit interactions both within and across organizational borders (Johnson

et al. 2005). Competitive advantage would result from a combination of unique organizational and leadership models supported by a range of complementary technologies. Beardsley et al. (2006) note that managing effective tacit interactions would involve fostering learning, collaboration and innovation and reducing organizational hierarchies and silos. Tacit interactions are the increasingly collaborative and complex aspects of many processes. Furthermore increasing the productivity of tacit interactions is not a simple matter; rather it is about avoiding standardising interactions and adopting an approach that fosters change, learning, collaboration, innovation and shared values. Productivity increases when mutual confidence and trust exists and extends beyond traditional organisational boundaries. This occurs when tacit interactions are allowed to emerge rather than be “engineered” by senior management. Interactions are an integral part of strategy, organisational structures and operational implementation. Skilfully used interactions can enhance strategic and operational responses to market opportunity.

Advances in information and communication technologies (ICT) have lowered costs across all three types of interactions. These developments in ICT along with the attraction of lower fixed asset costs, increasingly favour the growth of hybrid governance mechanisms rather than pure markets or hierarchies. See Table 1.

	Interaction Types		
	Tacit interactions	Transactional interactions	Transformational interactions
Nature of ICT use	To enhance the quality speed and scalability of decisions that employees make; expanding the breadth and impact of tacit interactions (Johnson et al. 2005)	Automation Communication Negotiation	Automation Communication
Cost implications for hierarchies	Costs for all three types are lower, lower negotiation costs, but higher costs of maintaining fixed assets than in markets.		
Cost implications for markets	Costs for all three types are lower, but searching and contract negotiation costs apply.		
Cost implications for fixed value chain networks, e.g., semiconductor, defence and aerospace industries (Fung et al. 2008)	Interaction costs are in between those of hierarchies and markets; benefits of lower fixed asset costs than hierarchies and lower cost of frequent searching contract negotiations than in markets. Difficult for suppliers to get in, stability of network due to high switching costs of bringing in new partners. Network members rely on each other for specific capabilities that they have created together.		
Cost implications for flexible value chain networks, e.g., apparel industry (Fung et al. 2008), current trends in IT outsourcing	Interaction costs are in between those of hierarchies and markets; a larger group of suppliers may be prequalified to be part of the network. A network of suppliers is brought together for a single or short-term set of engagements. Switching costs are lower due to fewer necessary idiosyncratic investments. The role of the network orchestrator becomes more significant.		

Table 1: Interactions and their implications for governance mechanisms

Since technology cannot substitute for tacit labour in the same way as it did for transactional or transformational work, the way companies deploy technology for improving the performance of

a tacit workforce needs to be different from the way technology was deployed for supporting transactional or transformational interactions (Johnson et al. 2005). Companies can use technology in three ways to enhance tacit interactions: to eliminate low value transactional activities, to enhance the quality speed and scalability of decisions that employees make, to adopt new and emerging technologies that expand the breadth and impact of tacit interactions. Broadband connectivity, collaborative software, videoconferencing, IP telephony and other emerging technologies can facilitate and progressively cut the cost of such interactions as collaboration continues to increase across organizational boundaries and vast geographical distances. Since organizational technology investments have traditionally been focussed on supporting transactional interactions and transformational interactions, the introduction of new technologies for supporting tacit interactions are expected to raise new IT-management issues including the need for new architectures and skills (Beardsley et al. 2006).

Fig 1 suggests how interactions could be applied in a market coordination (Sutton 1998) context. Interactions require to initiate *cooperation and collaboration* if they are to be used strategically (effectively) and operationally (efficiently); equally they also require *integration and coordination through effective communication*. For example, production activities (*transformation interactions*) can only be effective and efficient if there is a managed integration, coordination and communication process to ensure that the production schedule requirements for inputs and the resultant outputs meet the planned scheduled activities. Similarly for *transactional interactions* that interface with suppliers and customers to ensure cash flow continuity by *coordinating* payables and receivables. As interactions costs decline and increase in speed and accuracy global business activities are able to become more extensive. Tacit interactions ensure that product-service efficiency is monitored and improvement programs implemented to ensure that so too is competitive advantage. The generic requirements for all interactions is that they increase in *reach* and *richness* and decrease in *cost*.

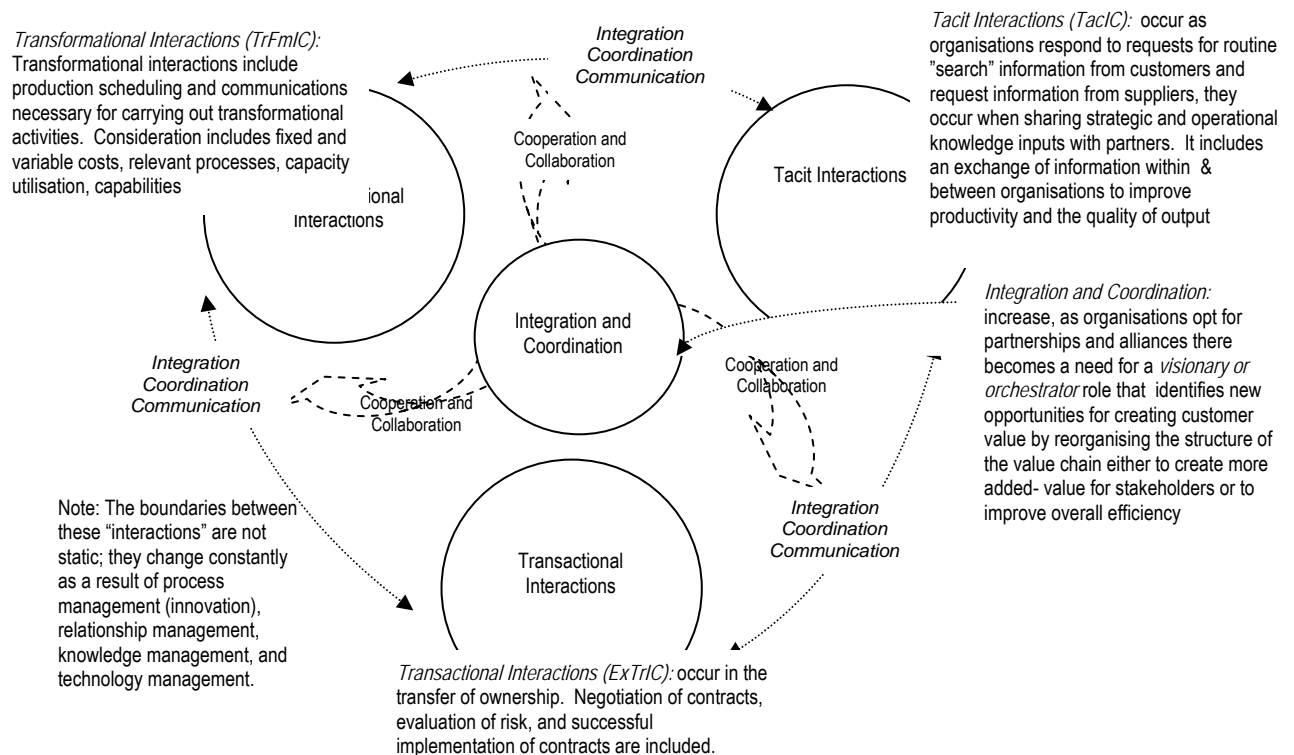


Fig 1: Interactions occur between suppliers and customers, and between upstream and downstream partners. Their importance in the exchange process is their influence on the nature of relationships within the value creation system.

Clearly interactions create costs between suppliers and customers, and between upstream and downstream partners. Their importance in the interaction process is their overall influence on the process, not only within pricing agreements, but also the nature of relationships within the value creation system. Sutton (1998) implies that understanding these relationships is essential in deciding upon the structure of the organisation, introducing *qualitative* considerations (such as control) into the decision process as well as the *quantitative* issues of cost and price.

Fig 2 adds detail to figure one by identifying detailed aspects of the interactions. Developments in ICT (information communications technology) have lowered the costs of interaction activities. Through EDI (electronic data interchange). Possibly more important is the fact that data storage costs as well as their transmission and this has resulted in many of these interaction items being automated. For example, quality control (tacit interactions) can be monitored automatically as an ongoing process, as output quality is compared against stored product specifications. Furthermore we can also measure ‘quality’ at a distance through *remote diagnostics*. Rolls Royce Engines and Caterpillar are among the most notable examples, where details of a component failure or one approaching the end of its useful life, can be transmitted to a service organisation for remedial action to be initiated.

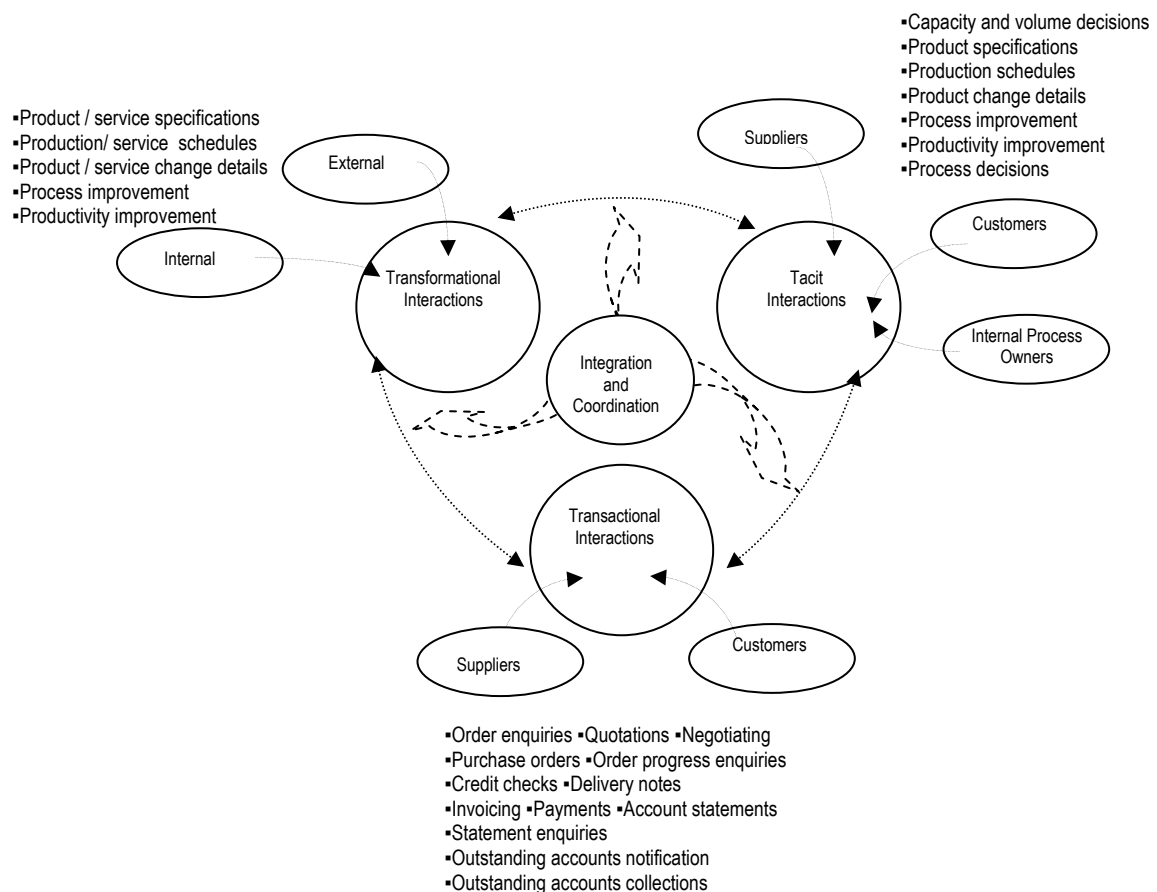


Fig 2: Details of interactions within the “exchange” process

For new business models to be effective, certain minimum requirements as to the quality and scope of intra- and inter-organisational interactions have to be met. The importance of interactions for productivity was highlighted by Teresko (2006) in a recent analysis of Toyota. A number of aspects of their operation were identified. These are shown in **Fig 3**. Teresko makes the point that these features are the result of Toyota management working on an intra and inter-organisational base to improve the interactions involved with each productivity performance characteristic. Beardsley et al (op cit) also cite Toyota. They suggest: “production

workers (at Toyota), for instance, collaborate continually with engineers and managers to find new ways of reducing costs and solving quality problems". It is interesting to see that while Toyota may not explicitly practice the "management of interactions" they have developed a business model around the principles of interactions management.

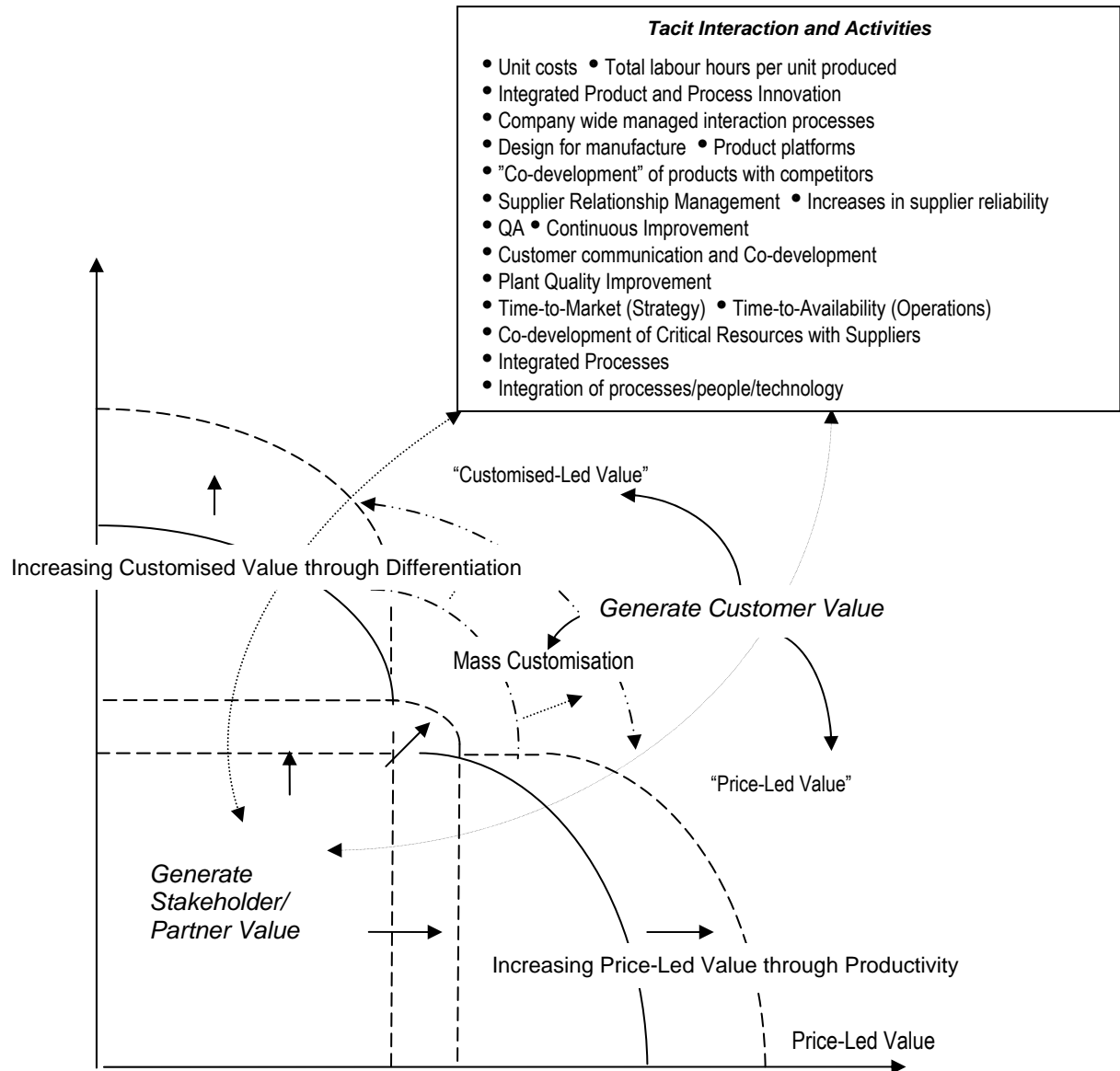


Fig 3: Examples of internal tacit interactions at Toyota

Transactional interactions are an interesting topic to explore. There are an increasing number of ways in which enquiry communications and subsequent transactions occur between vendors and customers. The growth of Internet sales to both B2B and B2C has increased the intensity of activities at the interface of these process interactions. Some have merged (e g, eBay and PayPal) and others have benefited from the growth of powerful "infomediaries" such as Google and similar ICT networks. This latter development has brought about both convenience and sophistication: Friedman *op cit* provides an example of an entrepreneurial company that uses a search engine to attract customers. Customers seeking product-service alternatives use a search engine to locate helpful information (price comparisons, price and location availability, etc) and find the Company's product-service advertised by side bar advertising. Often this persuades customers to redirect their purchasing processes and habits.

Consider transformation interactions as an example. Consumer durable products are accompanied by a service warranty (or guarantee) that commits the manufacturer to ensuring a period of no-cost service with the sale of the product. The alternatives available to the manufacturer are influenced by the transformation interaction costs. The manufacturer has a number of options. He could design the product to a cost/price target based upon an acceptable percentage of product failures that would be serviced directly by the manufacturer (or indirectly by a service partner); the issue for the manufacturer to decide is the impact that a specific level of product failures will have on customers, their probability of making repeat purchases, and the impact that the failures will have on the company's reputation. An option is to design the product to ensure that unless it has been abused it will be sufficiently robust to ensure its serviceability throughout the warranty period. Another option is for the manufacturer and service partner to use the *collaboration/cooperation* link between transformation and tacit interactions to establish a "feed-back loop" that reports the details of a service call out. Details would include product fault and an analysis of time and cost of the rectification. Given this detail the manufacture would be in a position very quickly to upon what action to take; redesign and replace the component or handle the incident as a "one-off" and deal with it within the company's policy. One other aspect of service can be considered, its positive impact on marketing. Periodically we see the automotive companies use extended warranties as a sales incentive. The cost of extending a three year warranty to a five year period clearly has cost implications; it will also (they anticipate) increase sales. By identifying the interaction costs involved the company is able to evaluate the financial viability of such a proposal. Furthermore because component suppliers and vehicle distributors are involved in transaction process interactions the overall interactions costs can be optimised as all parties can benefit. The process requires integration and coordination led analysis of the options; included in the analysis is an estimate of *who* will bear *what* proportion of the overall interaction costs. Ideally the result of reviewing and managing interaction costs is an improvement in profitability through increased revenues (closer attention to customer value drivers) and through cost reductions (efficiency improvements).

4. Key trends influencing interactions

In this section we examine three trends that are contributing to the development of interactions as strategic entities: (1) the convergence of information and communication technologies (ICTs); (2) differentiation of organizational roles in value creating networks; and (3) partnership strategies among network participants.

4.1 Convergence of information and communications technologies

The rapid developments in ICTs over the last few decades have both increased interaction capabilities on a global scale and substantially reduced the associated costs. ICTs are now integrated with business operations in ways not possible even a decade ago (Kaplan et al. 2008). E-business has gone from being a buzzword to becoming part of the status quo. Emerging IT capabilities are helping to define new business models, identify and target customer segments, and foster new sales channels.

A recent global survey by McKinsey showed that companies are increasing their use of Web 2.0 technologies (a blanket term used to describe trends that are caused by the move to the Internet as a platform for applications facilitating information sharing and collaboration) and leveraging them to change organizational structures and management practices (Bughin et al. 2008). Web 2.0 technologies are being used for internal use as well as for interfacing with customer and suppliers. The range of technologies being used includes web services, blogs, RSS, wikis, podcasts, social networking, peer-to-peer and mash-ups. While there are variations in the levels of satisfaction amongst companies using these technologies, in satisfied companies, business

units rather than IT departments drive the selection of these technologies. These companies are using the tools extensively for interactions with customers, suppliers and external experts.

As exemplified by large enterprise application suites with their massive bodies of difficult-to-modify code, IT can often be quite inflexible and stand in the way of near-term business initiatives (Seely and Hagel III 2005). There is a progressive move toward service oriented architectures (SOAs) that may help significantly in reducing obstacles to new operational initiatives. They were developed specifically to help businesses get more value from their existing IT resources. These architectures rely on loosely coupled connections and can be joined together easily without friction or customization (even if they use different operating systems and vocabularies for their operations) and just as easily disassembled and reassembled (Cherbakov et al). From a business perspective, SOAs represent services that improve the capabilities of firms to interact with customers and suppliers in value creating ways (Ordanini and Pasini 2008).

However, technology alone cannot provide the necessary interaction leverage for participants seeking to coordinate a range of activities in a value chain network. Hagel et al. (2008) highlight the importance of standardized protocols and governance structures as part of a shaping platform for facilitating the activities of network participants. They argue that the real power of Google's AdSense platform lies in the protocols and practices governing the submission, pricing, presentation and payment of advertisement, rather than in the technology used to connect content providers, advertisers and potential customers. Visa's interaction leverage, which is also dependent on technology, relies critically on a governance structure that allows agility and flexibility in a business entity jointly owned by a large number of banks and generating billions of dollars in transactions. Such leverage is especially useful in times of high uncertainty as it spreads the risk and accelerates return.

4.2 Differentiated roles in virtually integrated networks

Participation in value creating networks allows organizations to refine and leverage their distinctive assets, processes and capabilities. The behaviour of many contemporary organisations attests to the fact that this is contributing to the emergence of different roles along the value chain. A new role in the value chain is for organisations that do not themselves produce or distribute goods or services, but coordinate organisations that do. Roberts (2004) offers Nike and Benetton as exemplars commenting that: 'they have adopted the role of 'vertical architect' or 'value chain organizer', a role in which the lead firm organises and manages the value chain while actually owning few (if any) of the assets involved and carrying out few of the activities required to create value. The value chain integrator/coordinator manages a complex set of relationships with other value chain participants and coordinates product and information flows among them.

Other roles have been noted. The 'visionary or orchestrator' assumes a role of matching resources with opportunity(ies) and this role requires communication, collaboration and instigating co-destiny (the ability to create a network or business coalition that shares the same objectives, strategies and values). In an interview with Magretta (1998), Victor Fung, Chairman of Li & Fung, described the primary role of his company thus: "At one level, Li & Fung is an information node, flipping information between our 350 customers and our 7,500 suppliers." In their exploration of the organisation's use of demand chain analysis, Brown and Hagel III (2005) demonstrate the company's development of an approach to "managed aggregate interactions". Li and Fung is an apparel producer and distributor that works with 7,500 business partners, in 37 countries, and can call on any number of specialists to manufacture everything from high-end wool sweaters to synthetic slacks. The company uses interactions management to offer its customer base (typically large, often multinational, apparel retailers) an extensive range of product finish options. Orchestrators such as Li & Fung are rapidly expanding their range of participants in order to gain access to more specialized skills, as well as nurturing and developing relationships that help all parties build their capabilities more quickly. Li & Fung

sits at the hub of a network of specialist enterprises that pull in resources in different combinations and configurations, depending on the nature of demand. Their integration and coordination interactions result in the selection of the *appropriate supplier* of materials, the selection of a fabricating processor(s) having the *capabilities* to meet Li and Fung's customers' expectations for finish quality and *production capacity(ies)* to meet the quantity/time requirements. Li and Fung are an ideal example of interactions at work because their expertise is the ability to manage integration and coordination more than adequately and therefore at lower cost, than their clients.

The 'brand manager' role can be seen in the sports equipment and fashion sectors. Nike is a well known example of a marketing company that works with outsourced manufacturers and distributors that add value to Nike designs and brand management processes. Until very recently Haier, the PRC based white goods producer was a contract manufacturer: the company supplied a range of white goods products to North American department stores as store brand items. In recent years it has marketed a Haier range of items within this product range.

Process or capability specialists offer product-service augmentation by adding specific value to customers' products. Intel is a well known example of a processor supplier to major computer manufacturers, while Amazon adds value by making available their online ordering process to an expanding range of consumer products. Another example is that of Lastminute.com whose place in the value chain is to make the industries it services run more efficiently by increasing capacity utilisation, because any revenue from the last few airline seats are almost pure profit.

As organizations gain competence in, and recognition for playing particular roles in value chains, we can expect that others will recognise such innovativeness as approaches to be emulated and developed.

4.3 Partnership strategies amongst network participants

In new business models, earlier assumptions about the roles of stakeholders including customers, competitors, suppliers and other business partners are often overturned. It is increasingly normal for customers to be involved in production, for competitors to work cooperatively towards shared goals, and for consumers and business partners from different areas such as design and logistics to determine product specifications well in advance of production or sales. Some examples of new interaction strategies of the kind that are likely to proliferate in the future, are given in the following paragraphs.

Co-opetition may be seen operating in a number of industries (Nalebuff and Brandenburger 1996). It is not unusual for competitors to manufacture, sell and physically distribute each others products. The consolidation of what are considered non-core processes creates synergies through economies of scale in non-competitive areas. Co-opetition can be seen to be a means by which transformation, communication interactions costs may be contained, reducing suppliers' costs and customer prices.

Co-specialisation can be seen in high investment industries and those linked to consumer markets which are often subjected to excess capacity, e.g. consumer electrical products and computer hardware products. In these markets we see specialists appear such as Intel manufacturing processor equipment and Sony manufacturing monitors. The computer hardware industry has fragmented over the past fifteen to twenty years from a relatively vertically integrated industry into one of co-specialists who operate as a virtually integrated organisation (Champion, 2001). Chip manufacturing, computer assembly and delivery, software and support services are all now quite independently distinguishable but interlinked markets.

Collaboration is apparent in industries with high RD&D stakeholders and investment requirements. It is quite common in the automotive industry where the major companies join forces to develop low energy use engines and automatic transmission components (Friedman 2006) suggests that the convergence of the 'socio-economic-geo-political developments' of the

years since the fall of the Berlin Wall and the breaking down of the hierarchies that existed, together with the concurrent ICT developments, triggered this convergence 'of new players on a new playing field, developing new processes and habits for collaboration'. Further, he sees this as 'the most important force shaping global economics and politics in the twenty first century'. He suggests *stages of convergence*. The first *convergence* resulted in a web-enabled platform that enabled multiple collaboration enabling countries, organisations and institutions anywhere in the world to collaborate with each other. Friedman suggests a "Flat World" with a notion of "horizontalisation", as his second convergence. It suggests a process whereby internal and external social, economic as well as corporate barriers are broken down and value creation occurs horizontally rather than vertically. Friedman gives another example: HP, Cisco, and Nokia collaborated on the development of a camera/cell phone that beams its digitised pictures to an HP printer that rapidly reproduces them. This, one of a myriad of similar examples, suggests a change in business practices that are less about command and control and much more about connecting, communicating, and collaborating horizontally.

Co-creativity or prosumerism, as (Toffler 1970) first identified it, is a term used when consumers become involved in creating products and service support to meet their expectations precisely. For the supplier this can have both positive and negative interaction cost effects. The positive effects are that the costs of product and service 'design' are borne, at least in part, by the customer; the negative effect exists because the costs of producing and delivering the customer's value expectations will remain the responsibility of the supplier. For example, travel companies encourage customer involvement in building their own itineraries, and a number of financial organisations offer a 'tailor your own' mortgage service. The suppliers can contain the interaction costs by working with a menu of product and service components and options offering these to potential customers and from which they build a customised version of the product that best meets their needs. Dell (Kumar and Craig 2007; Magretta 1998b), a classic example of this approach, is by no means unique as small furniture manufacturers offer a similar service. Indeed the current interest in mass customisation is based on this concept and the costs and benefits of the approach to both suppliers and their customers. The automotive industry has become expert in using shared product platforms as a basis for building a range of vehicles that seemingly are different but do in fact share many basic components, the practice is now inter-organisational with platforms being shared by competitors.

Co-productivity occurs when a value chain network member works with upstream and downstream network members to reduce costs, and possibly quality, of the end-product by re-allocating value chain network tasks. IKEA uses *co-productivity* to contain its costs. IKEA by working closely with suppliers and customers in the design of transformation interaction processes. IKEA sells its products in 'flat pack' format and the co-productivity aspects of the interactions are undertaken by customers who accept virtually all of the in-store selling tasks, transportation to their homes, and the assembly of the product. In this example the interactions comprise transformation, communication, and exchange; the interactions costs are assessable as IKEA offers its customers a service facility two of the tasks i.e. home delivery and assembly.

5. Mapping Interactions: IKEA

The example that follows as **Fig 4** is based upon observations of operations activities and published data on IKEA. As described above IKEA is well known for its use of co-productivity in its supplier and customer relationship strategies and for these to be effective the organisation has clearly identified the types of interactions that are required for the effective management of these strategies and the efficient implementation of the operational processes that support them. Two examples from figure four emphasise the importance of developing an *interactions strategy* in an organisation with a business model that is very dependent upon "interlocking" supplier and customer relationships. Important IKEA/Supplier interactions are identified as: identifying global sourcing availability, 'the strategic' location of production capacity, matching supplier capabilities with downstream product capability requirements, working with suppliers

to develop processes and capabilities to ensure they 'fit' the IKEA customer self-assembly model, and , ensuring the observation of environmental responses of suppliers. Important IKEA/Customer interactions are: providing internet and in-store catalogue data of products and services, ensuring that product assembly instructions are clear of ambiguity and easy to follow, providing in-store product –service advice, and, checking current product availabilities for customers at the POS.

The emergence of interactions as strategic entities in value chain networks

Bhattacharjya & Walters

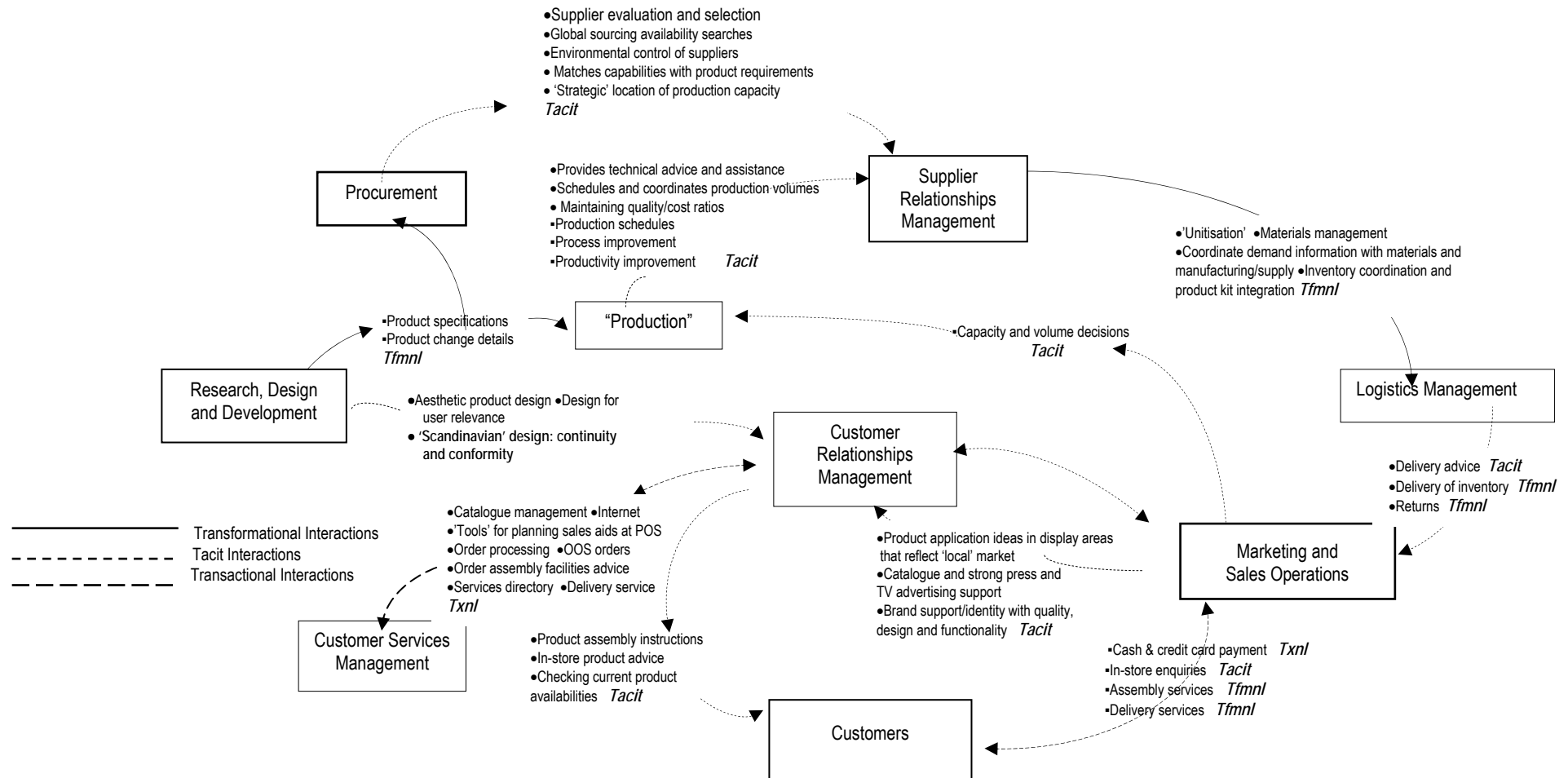


Fig 4: Interactions profiles for IKEA

6. Concluding comments

The increase in interaction efficiency will increase the number of businesses working together as networks and it will also increase the use of network applications within businesses. Clearly such changes have implications for business organisation. Internet transactions will facilitate both customer and supplier relationship management. Product customisation will become easier, faster and less costly as interaction facilities and costs increase in cost efficiency and communications can become more closely targeted, frequent and accurate. Bornheim et al. (2001) cites Woodall who claimed that the transaction costs of purchasing products and services are being reduced by up to 60 percent through e-procurement technologies.

One approach to analysing the old and new business models is provided by transaction economics (Coase 1937; Williamson 1985) that would approach this issue as essentially a comparison between the relative costs of using internal resources and those of external suppliers. What would have changed over the years, of course, are the relative costs of either option as firms trade-off the value of specialisation against the costs associated with external supply alternatives. A variation on this approach is to take a broader view of the costs associated with inter-organisational association by drawing on the concept of 'interaction costs' (Butler et al. 1997; Hagel and Singer 1999). Interaction costs include transaction costs (as described by Coase and others) but add the costs for exchanging ideas and information.

Clearly an understanding of how interactions influence business decisions can have a significant impact on both strategy and operational decisions. The impact of information communications technology, together with increasing globalisation, has increased the significance of interactions on inter-organisational (and inter-continental) processes. In practice, the continued expansion and application of 'interactions theory' is likely to be responsible for a further evolution of contemporary business models. It is also likely that 'industry drivers' such as technology and relationship management will have influence as businesses develop more trust and dependencies upon each other as the continued developments in interactions applications increase the speed and transparency of their relationships.

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